

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-211957

(43)Date of publication of application : 06.08.1999

Int.Cl.

G02B 7/02

Application number : 10-025185

(71)Applicant : NIKON CORP

Date of filing : 23.01.1998

(72)Inventor : OTA SHIRO

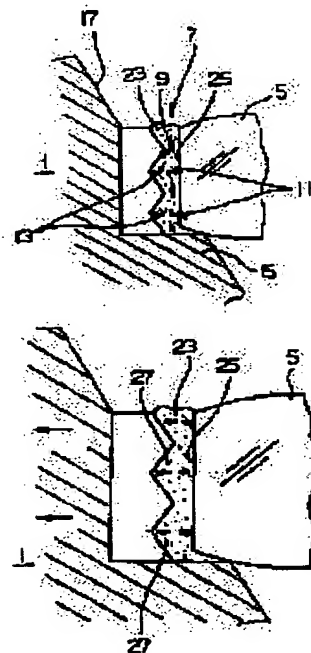
MORIYA MASAMI

LENS HOLDING MEMBER

Abstract:

PROBLEM TO BE SOLVED: To prevent an optical lens from falling off.

SOLUTION: Two annular grooves 11 having V-shaped cross section are formed on the adhesive surface 9 of a lens chamber 7 in a lens holder 1, and a trough part 13 of the groove 11 is a recessed part. When adhesive is injected in a gap (21) between the surface 9 and the optical lens 5, a part of the adhesive 23 enters the trough part 13 of the groove 11 and is hardened when a specified time elapses. Since the thermal expansion amount of the lens holder 1 due to the rise of outside air temperature is small in the case of using the lens barrel under a burning sun, the gap (21) between the surface 9 and the lens 5 is extended. In such a case, tensile stress acts on the adhesive 23, but is dispersed and absorbed by the elasticity of the adhesive 23 at a wedged part 27 where the adhesive entering the trough part 13 of the groove 11 is hardened. Even when the adhesive 23 is peeled from the surface 9, the wedged part 27 is engaged in the groove 11, so that the lens 5 is prevented from falling off.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted to a patent]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

NOTICES *

The Patent Office is not responsible for any errors caused by the use of this translation.

This document has been translated by computer. So the translation may not reflect the original precisely.

** shows the word which can not be translated.

In the drawings, any words are not translated.

JMS

im(s)]

im 1] The lens attachment component which an optical lens is the lens attachment component which has the lens 1 contained and pasted up, and is characterized by forming in this lens room the crevice with which the inflow of adhesives is presented in the adhesion side which stands face to face against the peripheral face of said optical lens.

im 2] The lens attachment component according to claim 1 to which said crevice is characterized by being a ***** straight-line slot at the optical axis of a circular sulcus, a spiral slot, or said optical lens.

im 3] The lens attachment component according to claim 1 or 2 characterized by forming said crevice of the heights 1 in the injection-molding mold while being manufactured by the injection-molding method made from synthetic 1.

translation done.]

BEST AVAILABLE COPY

NOTICES *

The Patent Office is not responsible for any errors caused by the use of this translation.

This document has been translated by computer. So the translation may not reflect the original precisely.
 ** shows the word which can not be translated.
 In the drawings, any words are not translated.

DETAILED DESCRIPTION

Detailed Description of the Invention]

1] Field of the Invention] This invention relates to the lens attachment component with which maintenance of the optical axis in a lens barrel is presented, and relates to the technique of aiming at omission prevention of an optical lens, in the field.

2] Description of the Prior Art] A camera is equipped with the lens barrel of various formats, such as wide angle lenses, telephoto lenses, etc. including a single focal lens or a zoom lens. The lens barrel has two or more lens groups which consist of one sheet or two or more optical lenses, and focusing and zooming are performed when a photography person (the camera itself) fluctuates a distance each lens between groups suitably. Therefore, two or more lens attachment components with which maintenance of each lens group is presented, the cam mechanism to which longitudinal slide movement of these lens attachment component is carried out in accordance with an optical axis are built in the lens barrel.

3] A lens attachment component is the tubed part article equipped with the lens room which an optical lens inner-mounts, generally a binder is used for fixing with a lens room and an optical lens. In a lens attachment component in recent years, it replaces with the cutting article of the conventional light metal in order to attain improvement in mass-production nature, lightweight-izing and low cost-ization, etc., and the injection-molded product of synthetic resin is in use. After making the lens interior of a room insert and position an optical lens with alignment equipment in the assembly of a lens attachment component and an optical lens, the nozzle of an adhesives injector is used for the gap of the adhesion side of a lens room, and the peripheral face of an optical lens, and adhesives are poured in. In addition -- the two or more adhesion sides of a lens attachment component are established at a radial between the openings into which the chuck of alignment equipment advances -- the front face -- being smooth (or crimp finishing) -- it has some problems.

4] Problem(s) to be Solved by the Invention] In the conventional lens attachment component, when using it, having been mounted in the lens barrel, the optical lens might be omitted from the lens room. It is also for adhesives to exfoliate comparatively easily from an adhesion side conjointly that the material of a lens attachment component is lubricative (synthetic resin, and this tends to happen by what has the large weight of an optical lens, or especially the thing is heavy, thing which has a small adhesion area) that has the thin rim of an optical lens, when a lens attachment component carries out thermal expansion by the rise of outside temperature or an impact load acts on a lens attachment component by fall etc. Since the image formation function of a lens barrel will be lost, it becomes impossible to completely perform subsequent photography etc., if such fault arises, and also great time amount and cost are needed for repair. In addition, since an optical lens does not almost have lubricity comparatively low [the coefficient of thermal expansion of a material], adhesives adhere to a peripheral face comparatively firmly by performing sandblasting processing etc. This invention was made in view of the above-mentioned situation, and aims at offering the lens attachment component which aimed at omission prevention of an optical lens.

5] Means for Solving the Problem] In order to solve the above-mentioned technical problem, in invention of claim 1, that is, in which the crevice with which the inflow of adhesives is presented was formed in the adhesion side where an optical lens is the lens attachment component which has the lens room contained and pasted up, and stands face to face against the peripheral face of said optical lens at this lens room is proposed.

6] Moreover, in invention of claim 2, said crevice proposes what is a ***** straight-line slot in the lens

hment component of claim 1 to the optical axis of a circular sulcus, a spiral slot, or said optical lens.

7] Moreover, in invention of claim 3, in the lens attachment component of claims 1 or 2, while being manufactured by the injection-molding method made from synthetic resin, that in which said crevice is formed of the heights formed by the injection-molding mold is proposed.

8] Since the part which flowed into the crevice of adhesives serves as a wedge according to these invention, even if adhesives exfoliate from an adhesion side according to the thermal expansion and the impact load of a lens attachment component, dedropping becomes that an optical lens does not have less easily. Moreover, if the depth of a crevice is adjusted to some extent, since the stress of thermal expansion or an impact load will be distributed, the exfoliation itself is being able to happen easily due to the elasticity of adhesives.

9] [Modiment of the Invention] Hereafter, 1 operation gestalt of this invention is explained based on a drawing. Drawing 1 is the top view of the lens attachment component (it is hereafter described as a lens holder) concerning the 1st operation gestalt of this invention, and drawing 2 is an A-A sectional view in drawing 1 (drawing of longitudinal section). As shown in drawing 1 and drawing 2, a lens holder 1 is the thing in which the lens room 7 which contains an optical lens 5 was formed in the center section of the cylindrical shape-like body 3 of a holder, and six adhesion sides 9 are formed in the lens room 7 at the radial. The body 3 of a holder is an injection molding article made from synthetic resin (glass fiber strengthening polycarbonate etc.), and the lens room 7 is formed with the mold mold which moves relative to the body 3. L is the optical axis of an optical lens 5 among drawing, and the lens holder 1 is formed considering the optical axis L as an axial center.

0] As shown in drawing 3 (important section expansion perspective view in drawing 1), two or more articles of illustration two articles) formation of the circular sulcus 11 of a V character cross section is carried out, and roughly 13 of these circular sulci 11 is a crevice in this operation gestalt in the adhesion side 9. Moreover, in drawing 4 the step 15 which the end face of an optical lens 5 contacts down the lens room 7 is formed, and the taper side 17 is formed in the body 3 of a holder in order to make insertion of an optical lens 5 easy at the method of the same as the method of drawing 3. A sign 19 is the opening prepared between each adhesion side 9 among drawing.

1] Hereafter, an operation of the 1st operation gestalt is described. With this operation gestalt, when an optical lens 5 is inserted and positioned in the lens room 7 of a lens holder 1 by the alignment equipment which is not illustrated, adhesives are poured into the gap 21 of the adhesion side 9 and an optical lens 5 from the nozzle of the adhesives dispenser which does not illustrate this, either. While the poured-in adhesives 23 flow between the adhesion side 9 of the lens room 7, and the peripheral face 25 of an optical lens 5, the part advances also into the trough 13 of a circular sulcus and as shown in drawing 4, when predetermined time passes, the whole hardens it. In addition, sandblasting processing of the peripheral face 25 of an optical lens 5 is carried out in order to aim at firm adhesion of adhesives 23. Moreover, the chuck of alignment equipment advances into the opening 19 of the lens room 7, and also the amount of adhesives 23 surplus flows.

2] Now, a lens holder 1 is included in the lens barrel which is not illustrated after hardening of adhesives 23, and is used [various] according to an external environment. For example, since the amount of thermal expansion of the lens holder 1 by the rise of outside air temperature is large when a lens barrel is used in the flame world, the gap 21 of adhesion side 9 and an optical lens 5 spreads. In this case, although tensile stress acts on adhesives 23 as shown in drawing 5, in the part (it is hereafter described as the cuneus) 27 which entered into the trough 13 of a circular sulcus and was hardened, this tensile stress is distributed and it is absorbed by the elastic deformation of adhesives 23. Moreover, although an impact load will act on a lens holder 1 if a photography person drops a lens barrel, also in this case, it distributes by the cuneus 27 similarly and an impact load is absorbed by the elastic deformation of adhesives 23. Even if neither tensile stress nor an impact load can absorb in the elastic deformation in the cuneus 27 and adhesives 23 exfoliate from the adhesion side 9, when the cuneus 27 is engaging with the circular sulcus 11, omission of optical lens 5 are prevented.

13] Important section expansion strabism has shown the 2nd - the 4th operation gestalt of this invention to drawing 6 and drawing 8, respectively. As shown in these drawings, with the 2nd operation gestalt, the spiral slot 31 of a V character cross section is formed in the adhesion side 9 two or more articles, with the 3rd operation gestalt, one articles are formed in the circular-sulcus 33 adhesion side 9 of a rectangle cross section, and the rectilinear-propagation slot 35 in alignment with an optical axis L is formed in the adhesion side 9 in the 4th operation gestalt. Also in these operation gestalt, in order that the adhesives which entered the spiral slot 31 or the circular sulcus 33, and the rectilinear-propagation slot 35 serve as cuneus and may prevent omission of an optical lens 5 with the 1st operation gestalt and the same operation gestalt, even if it chooses which operation gestalt according to the design of a mold mold, the ease of manufacture, etc., the purpose of this invention is reached.

4] Although explanation of a concrete operation gestalt is finished above, the mode of this invention is not limited to this operation gestalt. For example, although the above-mentioned operation gestalt applies this invention to lens attachment component holding one optical lens, it may be applied to the thing holding two or more optical lenses. Moreover, the number of an adhesion side is not limited, and it is not restricted to the above-mentioned operation gestalt about the concrete configuration of each part of a lens attachment component, and can change suitably for convenience' sake on a design or assembly etc.

5] [Effect of the Invention] Since the crevice with which the inflow of adhesives is presented was formed in the adhesion part which an optical lens is the lens attachment component which has the lens room contained and pasted up, and the lens face to face against the peripheral face of said optical lens at this lens room according to this invention, Since the adhesive which flowed into the crevice of adhesives serves as a wedge, even if adhesives exfoliate from an adhesion side according to the thermal expansion and the impact load of a lens attachment component If the depth of a crevice is increased to some extent, since dedropping becomes that an optical lens does not have less easily, and also the stress of thermal expansion or an impact load will be distributed, the exfoliation itself stops being able to happen easily due to the elasticity of adhesives.

translation done.]

NOTICES *

The Patent Office is not responsible for any errors or omissions caused by the use of this translation.

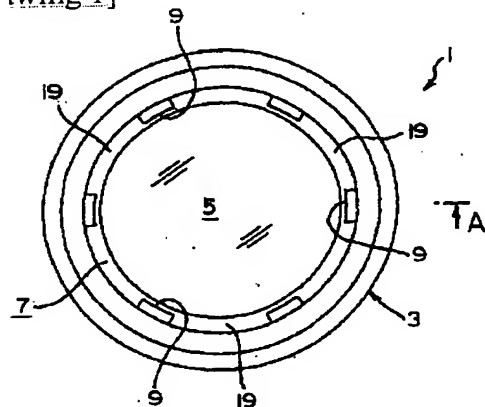
This document has been translated by computer. So the translation may not reflect the original precisely.

** shows the word which can not be translated.

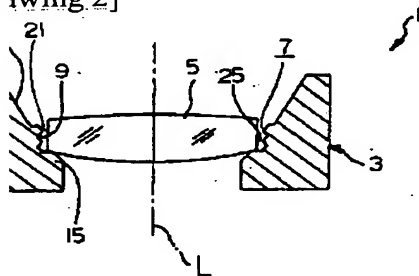
In the drawings, any words are not translated.

DRAWINGS

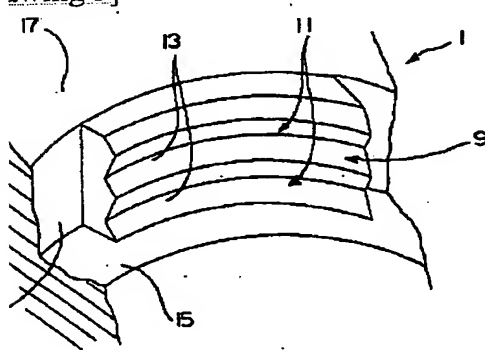
Drawing 1]



Drawing 2]



Drawing 3]



Drawing 4]

BEST AVAILABLE COPY

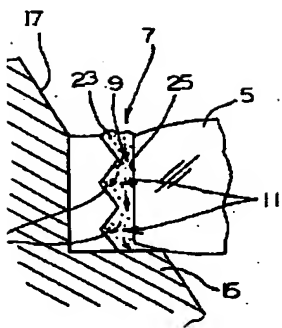


Figure 5]

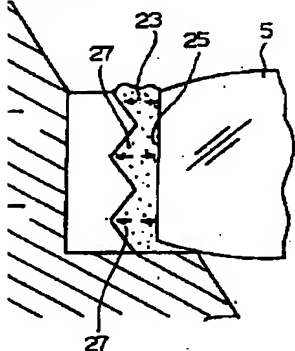


Figure 6]

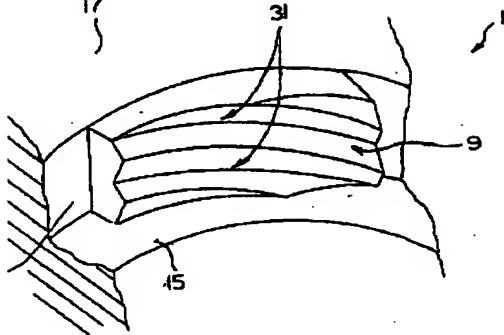


Figure 7]

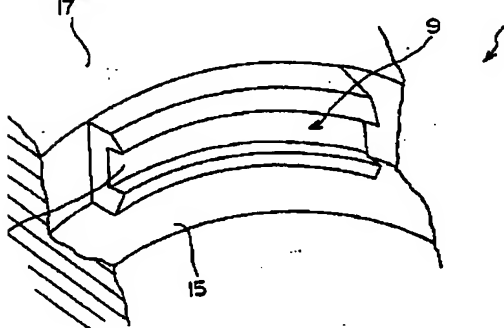
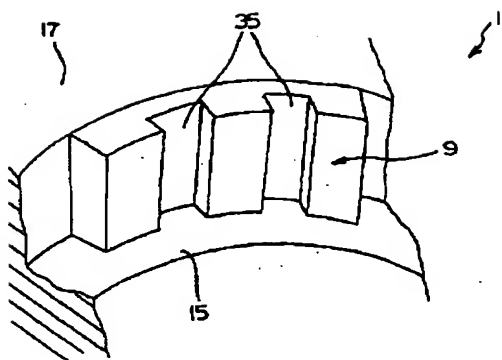


Figure 8]

BEST AVAILABLE COPY



translation done.]

BEST AVAILABLE COPY